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ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2  
12817A LANCE MISSILE NUMBER 4106, ROUND NUMBER 295 RCL.(U)  
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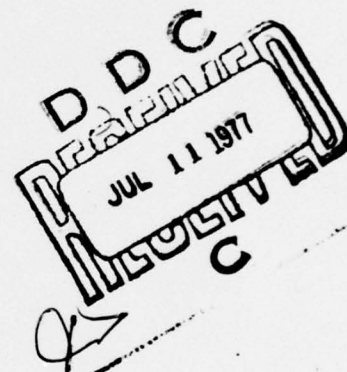
METEOROLOGICAL DATA REPORT

12817A LANCE  
MISSILE NO. 4106, ROUND NO. 295 RCL  
(21 APRIL 1977)

BY

WSMR METEOROLOGICAL TEAM

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| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br><br>Meteorological data gathered for the launching of 12817A Lance, Missile Number 4106, Round Number 295 RCL, are presented in tabular form. |                       |  |

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## INTRODUCTION

12817A Lance, Missile Number 4106, Round Number 295 RCL, was launched from RATSCAT, White Sands Missile Range (WSMR), New Mexico, at 0850 HRS MST, 21 April 1977. The scheduled launch time was 0845 HRS MST.

## DISCUSSION

Meteorological data were recorded and reduced by the WSMR Meteorological Team, Atmospheric Sciences Laboratory (ASL), WSMR, New Mexico. The data are presented in the following tabulations.

|                   |         |                   |
|-------------------|---------|-------------------|
| ELEVATION         | 3964.61 | FEET/MSL          |
| PRESSURE          | 880.2   | MBS               |
| TEMPERATURE       | 8.2     | °C                |
| RELATIVE HUMIDITY | 66      | %                 |
| DEW POINT         | 2.2     | °C                |
| DENSITY           | 1085.0  | GM/M <sup>3</sup> |
| WIND SPEED        | 02      | MPH               |
| WIND DIRECTION    | 125     | DEGREES           |
| CLOUD COVER       | .1      | Sc                |

TABLE I. SURFACE OBSERVATIONS TAKEN AT RATSCAT,  
0841 HRS MST/21 APRIL 1977.

|                   |         |                   |
|-------------------|---------|-------------------|
| ELEVATION         | 3964.61 | FEET/MSL          |
| PRESSURE          | 880.2   | MBS               |
| TEMPERATURE       | 10.0    | °C                |
| RELATIVE HUMIDITY | 63      | %                 |
| DEW POINT         | 3.2     | °C                |
| DENSITY           | 1078.0  | GM/M <sup>3</sup> |
| WIND SPEED        | 02      | MPH               |
| WIND DIRECTION    | 129     | DEGREES           |
| CLOUD COVER       | .1      | Sc                |

TABLE II. SURFACE OBSERVATIONS TAKEN AT RATSCAT,  
0847 HRS MST/21 APRIL 1977.

| T-TIME<br>(MIN-SEC) | SPEED<br>(MPH) | DIR<br>DEG |
|---------------------|----------------|------------|
| -30.0               | 01             | 250        |
| -20.0               | 01             | 250        |
| -10.0               | 02             | 250        |
| -00.00              | 02             | 250        |

TABLE III. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 1  
12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL  
LAUNCHED FROM RATSCAT, 0902 MST/21 APRIL 1977

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.



| HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) | HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) |
|------------------|------------------------|----------------|------------------|------------------------|----------------|
| SUR              | 000                    | 00             | 2100             | 180                    | 0.5            |
| 100              | 180                    | 01             | 2200             | 284                    | 4.0            |
| 200              | 180                    | 02             | 2300             | 289                    | 9.5            |
| 300              | 193                    | 02             | 2400             | 315                    | 9.5            |
| 400              | 360                    | 0.5            | 2500             | 326                    | 3.5            |
| 500              | 008                    | 3.5            | 2600             | 328                    | 5.0            |
| 600              | 328                    | 4.5            | 2700             | 292                    | 2.5            |
| 700              | 315                    | 6.5            | 2800             | 307                    | 2.5            |
| 800              | 291                    | 4.5            | 2900             | 305                    | 6.0            |
| 900              | 198                    | 1.5            | 3000             | 310                    | 10.5           |
| 1000             | 191                    | 8.0            | 3100             | 320                    | 9.0            |
| 1100             | 211                    | 8.0            | 3200             | 291                    | 4.5            |
| 1200             | 196                    | 3.5            | 3300             | 294                    | 9.0            |
| 1300             | 220                    | 4.0            | 3400             | 291                    | 7.5            |
| 1400             | 360                    | 0.5            | 3500             | 291                    | 7.5            |
| 1500             | 180                    | 1.0            | 3600             | 284                    | 10.5           |
| 1600             | 143                    | 2.5            | 3700             | 283                    | 7.0            |
| 1700             | 140                    | 4.0            | 3800             | 286                    | 7.0            |
| 1800             | 124                    | 2.0            | 3900             | 283                    | 9.0            |
| 1900             | 135                    | 3.0            | 4000             | 301                    | 14.0           |
| 2000             | 141                    | 3.0            | 4100             | 298                    | 15.0           |

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA, RELEASE NO. 1  
RELEASED FROM RATSCAT, AT 0847 MST/21 APRIL 1977  
12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL

PIBAL RELEASE POINT WSTM COORDINATES:

X = 513,312.04    Y = 357,958.56    Z = 3964.61

APPROXIMATELY: 1/4 MILE EAST OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

| HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) |
|------------------|------------------------|----------------|
| 4200             | 299                    | 15.5           |
| 4300             | 301                    | 13.5           |
| 4400             | 303                    | 14.0           |
| 4500             | 313                    | 14.0           |
| 4600             | 321                    | 12.0           |
| 4700             | 305                    | 12.0           |
| 4800             | 298                    | 12.5           |
| 4900             | 310                    | 11.0           |
| 5000             | 324                    | 15.5           |
| 5100             | 318                    | 15.5           |
| 5200             | 315                    | 13.0           |
| 5300             | 304                    | 12.5           |
| 5400             | 318                    | 13.5           |
| 5500             | 307                    | 15.0           |
| 5600             | 326                    | 14.5           |

| HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) |
|------------------|------------------------|----------------|
| 5700             | 334                    | 16.0           |
| 5800             | 320                    | 15.5           |
| 5900             | 322                    | 14.5           |
| 6000             | 316                    | 16.5           |
| 6100             | 317                    | 12.0           |
| 6200             | 315                    | 14.0           |
| 6300             | 318                    | 14.5           |
| 6400             | 315                    | 15.5           |
| 6500             | 314                    | 15.5           |
| 6600             | 331                    | 14.5           |
| 6700             | 315                    | 17.0           |
| 6800             | 325                    | 13.0           |
| 6900             | 318                    | 14.0           |
| 7000             | 313                    | 13.5           |

TABLE IV. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

| HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) | HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) |
|------------------|------------------------|----------------|------------------|------------------------|----------------|
| SUR              | 000                    | 00             | 2100             | 323                    | 2.5            |
| 100              | 000                    | 00             | 2200             | 346                    | 4.0            |
| 200              | 360                    | 0.5            | 2300             | 270                    | 2.5            |
| 300              | 018                    | 3.0            | 2400             | 270                    | 1.0            |
| 400              | 018                    | 1.5            | 2500             | 297                    | 1.0            |
| 500              | 078                    | 2.5            | 2600             | 276                    | 4.5            |
| 600              | 055                    | 2.0            | 2700             | 287                    | 5.5            |
| 700              | 180                    | 2.0            | 2800             | 312                    | 7.5            |
| 800              | 174                    | 5.0            | 2900             | 276                    | 5.0            |
| 900              | 169                    | 5.0            | 3000             | 261                    | 6.5            |
| 1000             | 202                    | 11.5           | 3100             | 260                    | 6.0            |
| 1100             | 204                    | 7.0            | 3200             | 261                    | 6.5            |
| 1200             | 198                    | 5.0            | 3300             | 270                    | 8.5            |
| 1300             | 149                    | 3.0            | 3400             | 286                    | 7.5            |
| 1400             | 174                    | 5.0            | 3500             | 287                    | 7.0            |
| 1500             | 130                    | 4.0            | 3600             | 296                    | 8.0            |
| 1600             | 173                    | 4.0            | 3700             | 279                    | 10.0           |
| 1700             | 180                    | 4.0            | 3800             | 294                    | 16.0           |
| 1800             | 173                    | 4.0            | 3900             | 315                    | 12.0           |
| 1900             | 211                    | 3.0            | 4000             | 300                    | 10.0           |
| 2000             | 233                    | 2.5            | 4100             | 324                    | 11.0           |

TABLE V. PILOT-BALLOON-MEASURED WIND DATA, RELEASE NO. 2  
RELEASED FROM RATSCAT, AT 0903 MST/21 APRIL 1977  
12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL

PIBAL RELEASE POINT WSTM COORDINATES:

X = 513,312.04      Y = 357,958.56      Z = 3964.61

APPROXIMATELY: 1/4 MILE EAST OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

| HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) |
|------------------|------------------------|----------------|
| 4200             | 319                    | 12.0           |
| 4300             | 317                    | 9.5            |
| 4400             | 315                    | 10.5           |
| 4500             | 308                    | 11.0           |
| 4600             | 327                    | 9.0            |
| 4700             | 325                    | 12.0           |
| 4800             | 321                    | 11.0           |
| 4900             | 321                    | 10.5           |
| 5000             | 319                    | 11.5           |
| 5100             | 310                    | 11.5           |
| 5200             | 313                    | 11.0           |
| 5300             | 303                    | 15.0           |
| 5400             | 315                    | 10.5           |
| 5500             | 308                    | 14.0           |
| 5600             | 323                    | 15.5           |
| 5700             | 334                    | 17.5           |
| 5800             | 327                    | 17.5           |
| 5900             | 321                    | 13.5           |
| 6000             | 340                    | 13.0           |
| 6100             | 324                    | 13.5           |
| 6200             | 332                    | 11.5           |
| 6300             | 330                    | 13.0           |
| 6400             | 330                    | 12.0           |
| 6500             | 348                    | 12.0           |

| HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) |
|------------------|------------------------|----------------|
| 6600             | 335                    | 18.0           |
| 6700             | 330                    | 17.3           |
| 6800             | 341                    | 18.0           |
| 6900             | 348                    | 20.0           |
| 7000             | 347                    | 21.0           |
| 7100             | 339                    | 25.0           |
| 7200             | 340                    | 28.5           |
| 7300             | 348                    | 27.5           |
| 7400             | 355                    | 24.5           |
| 7500             | 353                    | 24.0           |
| 7600             | 343                    | 26.0           |
| 7700             | 350                    | 26.5           |
| 7800             | 344                    | 25.5           |
| 7900             | 342                    | 27.0           |
| 8000             | 341                    | 30.0           |
| 8100             | 338                    | 28.0           |
| 8200             | 337                    | 28.0           |
| 8300             | 334                    | 27.5           |
| 8400             | 334                    | 28.0           |
| 8500             | 335                    | 28.5           |
| 8600             | 337                    | 30.5           |
| 8700             | 333                    | 32.0           |
| 8800             | 331                    | 31.5           |
| 8900             | 331                    | 29.0           |

TABLE V. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.



| HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) | HEIGHT<br>(FEET) | DIRECTION<br>(DEGREES) | SPEED<br>(MPH) |
|------------------|------------------------|----------------|------------------|------------------------|----------------|
| 9000             | 335                    | 28.5           | 10300            | 318                    | 26.0           |
| 9100             | 330                    | 27.5           | 10400            | 319                    | 24.5           |
| 9200             | 332                    | 28.0           | 10500            | 318                    | 23.5           |
| 9300             | 322                    | 27.0           | 10600            | 314                    | 23.5           |
| 9400             | 323                    | 27.0           | 10700            | 308                    | 26.5           |
| 9500             | 326                    | 25.5           | 10800            | 307                    | 24.0           |
| 9600             | 328                    | 28.0           | 10900            | 321                    | 24.0           |
| 9700             | 328                    | 28.0           | 11000            | 314                    | 24.0           |
| 9800             | 323                    | 27.0           | 11100            | 316                    | 25.0           |
| 9900             | 321                    | 21.0           | 11200            | 320                    | 26.5           |
| 10000            | 317                    | 25.5           | 11300            | 320                    | 26.0           |
| 10100            | 322                    | 27.5           | 11400            | 317                    | 23.5           |
| 10200            | 318                    | 28.5           |                  |                        |                |

TABLE V. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.



WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

SIGNIFICANT LEVEL DATA  
111003016  
JALLEN

STATION ALTITUDE 4051.00 FEET MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 160

TABLE VI.

| PRESSURE<br>MILLIBARS | GEOMETRIC<br>ALTITUDE<br>MSL FEET | TEMPERATURE    |                        | REL. HUM.<br>PERCENT |
|-----------------------|-----------------------------------|----------------|------------------------|----------------------|
|                       |                                   | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE |                      |
| 881.5                 | 4051.0                            | 11.3           | 3.1                    | 57.0                 |
| 850.0                 | 5043.7                            | 8.2            | -2.7                   | 46.0                 |
| 798.4                 | 6737.5                            | 6.9            | -9.0                   | 31.0                 |
| 700.0                 | 10227.1                           | -2.4           | -9.7                   | 57.0                 |
| 669.6                 | 11381.2                           | -4.5           | -10.3                  | 64.0                 |
| 589.2                 | 14651.0                           | -11.2          | -18.2                  | 56.0                 |
| 572.4                 | 15380.5                           | -11.6          | -22.7                  | 39.0                 |
| 500.0                 | 18734.4                           | -19.7          | -31.5                  | 34.0                 |
| 422.8                 | 22747.1                           | -29.8          | -44.6                  | 22.0                 |
| 400.0                 | 24036.6                           | -33.6          | -47.1                  | 24.0                 |
| 377.6                 | 25356.6                           | -37.3          | -49.3                  | 27.0                 |
| 346.6                 | 27282.5                           | -42.4          |                        |                      |
| 300.0                 | 30454.0                           | -48.1          |                        |                      |
| 287.4                 | 31382.2                           | -49.4          |                        |                      |
| 266.4                 | 33006.7                           | -52.8          |                        |                      |
| 250.0                 | 34351.3                           | -54.6          |                        |                      |
| 230.8                 | 36026.0                           | -57.1          |                        |                      |
| 207.8                 | 38213.7                           | -57.1          |                        |                      |
| 200.0                 | 39013.2                           | -56.0          |                        |                      |
| 188.6                 | 40238.4                           | -57.6          |                        |                      |
| 181.6                 | 41026.0                           | -57.1          |                        |                      |
| 161.8                 | 43434.2                           | -56.9          |                        |                      |
| 150.0                 | 45022.2                           | -54.9          |                        |                      |
| 133.4                 | 47481.5                           | -57.0          |                        |                      |
| 127.4                 | 48445.7                           | -55.4          |                        |                      |
| 119.5                 | 49788.2                           | -56.6          |                        |                      |
| 106.2                 | 52258.4                           | -56.2          |                        |                      |
| 100.0                 | 53515.1                           | -57.6          |                        |                      |
| 92.2                  | 55210.4                           | -56.6          |                        |                      |
| 70.0                  | 60944.4                           | -58.9          |                        |                      |

STATION ALTITUDE 4051.00 FEET MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 140

SIGNIFICANT LEVEL DATA  
1J10030160  
JALLEN

WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

TABLE VI. (CONT)

| PRESSURE GEOMETRIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT |
|--|---|----------------------|
|  |   |                      |
| 65.0 62477.6   | -59.4   |                      |
| 61.4 63663.2   | -56.6   |                      |
| 50.0 67941.0   | -59.0   |                      |
| 42.8 71176.9   | -57.1   |                      |
| 30.0 78653.6   | -54.4   |                      |
| 20.0 87318.7   | -50.6   |                      |

UPPER AIR DATA  
1110030160  
TALLEN

STATION ALTITUDE 4051.00 FEET MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 160

WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

TABLE VII.

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION (TN)<br>DEGREES | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|--|----------------------|------------------------------|----------------------------|--|----------------|---------------------------|
| 4051.0                            | 981.5                 | 11.3                                     | 57.0                 | 1076.0                       | 658.1                      | 0                                      | 0              | 1.000276                  |
| 4500.0                            | 867.1                 | 9.9                                      | 52.0                 | 1064.3                       | 656.3                      | 30.1                                   | 0.3            | 1.000267                  |
| 5000.0                            | 851.4                 | 8.3                                      | 46.5                 | 1051.3                       | 654.4                      | 30.1                                   | 0.6            | 1.000259                  |
| 5500.0                            | 835.8                 | 7.8                                      | 42.0                 | 1034.1                       | 653.7                      | 30.1                                   | 0.9            | 1.000252                  |
| 6000.0                            | 820.5                 | 7.5                                      | 37.5                 | 1016.7                       | 653.2                      | 352.0                                  | 0.9            | 1.000245                  |
| 6500.0                            | 805.4                 | 7.1                                      | 33.1                 | 999.7                        | 652.7                      | 283.6                                  | 3.1            | 1.000239                  |
| 7000.0                            | 790.5                 | 6.2                                      | 33.0                 | 984.4                        | 651.6                      | 283.8                                  | 5.3            | 1.000234                  |
| 7500.0                            | 775.8                 | 4.9                                      | 36.7                 | 970.6                        | 650.1                      | 295.5                                  | 6.7            | 1.000232                  |
| 8000.0                            | 761.3                 | 3.5                                      | 40.4                 | 957.0                        | 648.5                      | 309.7                                  | 8.2            | 1.000229                  |
| 8500.0                            | 747.1                 | 2.2                                      | 44.1                 | 943.7                        | 647.0                      | 324.1                                  | 10.0           | 1.000226                  |
| 9000.0                            | 733.1                 | 0.9                                      | 47.9                 | 930.6                        | 645.4                      | 334.4                                  | 12.0           | 1.000223                  |
| 9500.0                            | 719.4                 | -0.5                                     | 51.6                 | 917.6                        | 643.8                      | 341.9                                  | 14.2           | 1.000220                  |
| 10000.0                           | 706.0                 | -1.8                                     | 55.3                 | 904.9                        | 642.3                      | 346.7                                  | 16.3           | 1.000217                  |
| 10500.0                           | 692.7                 | -2.9                                     | 58.7                 | 891.5                        | 640.9                      | 350.1                                  | 18.3           | 1.000214                  |
| 11000.0                           | 679.5                 | -3.8                                     | 61.7                 | 877.5                        | 639.9                      | 346.3                                  | 19.5           | 1.000210                  |
| 11500.0                           | 666.5                 | -4.7                                     | 63.7                 | 863.7                        | 638.7                      | 341.6                                  | 20.7           | 1.000207                  |
| 12000.0                           | 653.6                 | -5.8                                     | 62.5                 | 850.3                        | 637.5                      | 334.9                                  | 21.8           | 1.000203                  |
| 12500.0                           | 640.9                 | -6.8                                     | 61.3                 | 837.1                        | 636.2                      | 329.5                                  | 23.0           | 1.000198                  |
| 13000.0                           | 628.5                 | -7.8                                     | 60.0                 | 824.2                        | 635.0                      | 327.0                                  | 23.8           | 1.000195                  |
| 13500.0                           | 616.3                 | -8.8                                     | 58.8                 | 811.4                        | 633.7                      | 325.4                                  | 23.8           | 1.000191                  |
| 14000.0                           | 604.4                 | -9.9                                     | 57.6                 | 798.9                        | 632.5                      | 324.4                                  | 22.7           | 1.000187                  |
| 14500.0                           | 592.7                 | -10.9                                    | 56.4                 | 786.5                        | 631.2                      | 323.2                                  | 22.3           | 1.000183                  |
| 15000.0                           | 581.1                 | -11.4                                    | 47.9                 | 772.8                        | 630.5                      | 321.9                                  | 21.9           | 1.000179                  |
| 15500.0                           | 569.6                 | -11.9                                    | 38.8                 | 759.1                        | 629.9                      | 321.3                                  | 22.8           | 1.000174                  |
| 16000.0                           | 558.3                 | -13.1                                    | 38.1                 | 747.4                        | 628.4                      | 320.8                                  | 23.9           | 1.000171                  |
| 16500.0                           | 547.1                 | -14.3                                    | 37.3                 | 736.0                        | 626.9                      | 321.1                                  | 24.9           | 1.000168                  |
| 17000.0                           | 536.2                 | -15.5                                    | 36.6                 | 724.7                        | 625.5                      | 321.3                                  | 26.0           | 1.000165                  |
| 17500.0                           | 525.5                 | -16.7                                    | 35.8                 | 713.6                        | 624.0                      | 321.1                                  | 27.3           | 1.000162                  |
| 18000.0                           | 515.0                 | -17.9                                    | 35.1                 | 702.7                        | 622.5                      | 320.9                                  | 28.6           | 1.000160                  |
| 18500.0                           | 504.7                 | -19.1                                    | 34.3                 | 692.0                        | 621.0                      | 321.8                                  | 29.9           | 1.000157                  |

UPPER AIR DATA  
1110330160  
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STATION ALTITUDE 4051.00 FFF FT MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 160

WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

TABLE VII. (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE                  |                                    | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF       |                          | WIND DATA      |  | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|------------------------------|------------------------------------|----------------------|------------------------------|----------------|--------------------------|----------------|--|---------------------------|
|                                   |                       | AIR<br>DEGREES<br>CENTIGRADE | -DEWPOINT<br>DEGREES<br>CENTIGRADE |                      |                              | SOUND<br>KNOTS | DIRECTION<br>DEGREES(TN) | SPEED<br>KNOTS |  |                           |
| 64000.0                           | 60.4                  | -56.8                        |                                    | 97.3                 | 573.0                        | 228.2          | 9.9                      | 1.000022       |  |                           |
| 64500.0                           | 59.0                  | -57.1                        |                                    | 95.1                 | 572.7                        | 213.9          | 8.1                      | 1.000021       |  |                           |
| 65000.0                           | 57.6                  | -57.3                        |                                    | 93.0                 | 572.3                        | 194.7          | 6.8                      | 1.000021       |  |                           |
| 65500.0                           | 56.2                  | -57.6                        |                                    | 90.9                 | 571.9                        | 172.6          | 5.0                      | 1.000020       |  |                           |
| 66000.0                           | 54.9                  | -57.9                        |                                    | 88.8                 | 571.6                        | 138.7          | 4.6                      | 1.000020       |  |                           |
| 66500.0                           | 53.6                  | -58.2                        |                                    | 86.8                 | 571.2                        | 119.0          | 3.9                      | 1.000019       |  |                           |
| 67000.0                           | 52.3                  | -58.5                        |                                    | 84.9                 | 570.8                        | 97.4           | 2.6                      | 1.000019       |  |                           |
| 67500.0                           | 51.1                  | -58.8                        |                                    | 83.0                 | 570.4                        | 53.5           | 2.0                      | 1.000018       |  |                           |
| 68000.0                           | 49.9                  | -59.0                        |                                    | 81.1                 | 570.2                        | 321.6          | 2.8                      | 1.000018       |  |                           |
| 68500.0                           | 48.7                  | -58.7                        |                                    | 79.1                 | 570.5                        | 301.9          | 5.9                      | 1.000018       |  |                           |
| 69000.0                           | 47.5                  | -58.4                        |                                    | 77.1                 | 570.9                        | 299.1          | 7.3                      | 1.000017       |  |                           |
| 69500.0                           | 46.4                  | -58.1                        |                                    | 75.1                 | 571.3                        | 301.2          | 6.5                      | 1.000017       |  |                           |
| 70000.0                           | 45.3                  | -57.8                        |                                    | 73.3                 | 571.7                        | 304.0          | 5.8                      | 1.000016       |  |                           |
| 70500.0                           | 44.2                  | -57.5                        |                                    | 71.4                 | 572.1                        | 320.7          | 4.3                      | 1.000016       |  |                           |
| 71000.0                           | 43.2                  | -57.2                        |                                    | 69.6                 | 572.5                        | 352.3          | 3.4                      | 1.000015       |  |                           |
| 71500.0                           | 42.1                  | -57.0                        |                                    | 67.9                 | 572.8                        | 22.0           | 3.9                      | 1.000015       |  |                           |
| 72000.0                           | 41.2                  | -56.8                        |                                    | 66.3                 | 573.0                        | 32.7           | 4.8                      | 1.000015       |  |                           |
| 72500.0                           | 40.2                  | -56.6                        |                                    | 64.7                 | 573.3                        | 39.7           | 5.9                      | 1.000014       |  |                           |
| 73000.0                           | 39.2                  | -56.4                        |                                    | 63.1                 | 573.5                        | 41.5           | 6.0                      | 1.000014       |  |                           |
| 73500.0                           | 38.3                  | -56.3                        |                                    | 61.6                 | 573.7                        | 41.4           | 5.7                      | 1.000014       |  |                           |
| 74000.0                           | 37.4                  | -56.1                        |                                    | 60.1                 | 574.0                        | 41.2           | 5.3                      | 1.000013       |  |                           |
| 74500.0                           | 36.5                  | -55.9                        |                                    | 58.6                 | 574.2                        | 41.0           | 6.3                      | 1.000013       |  |                           |
| 75000.0                           | 35.7                  | -55.7                        |                                    | 57.2                 | 574.5                        | 40.9           | 7.3                      | 1.000013       |  |                           |
| 75500.0                           | 34.9                  | -55.5                        |                                    | 55.8                 | 574.7                        | 42.8           | 7.6                      | 1.000012       |  |                           |
| 76000.0                           | 34.0                  | -55.4                        |                                    | 54.4                 | 574.9                        | 49.0           | 6.8                      | 1.000012       |  |                           |
| 76500.0                           | 33.2                  | -55.2                        |                                    | 53.1                 | 575.2                        | 56.7           | 6.1                      | 1.000012       |  |                           |
| 77000.0                           | 32.5                  | -55.0                        |                                    | 51.8                 | 575.4                        | 67.8           | 4.5                      | 1.000012       |  |                           |
| 77500.0                           | 31.7                  | -54.8                        |                                    | 50.6                 | 575.6                        | 92.4           | 2.9                      | 1.000011       |  |                           |
| 78000.0                           | 30.9                  | -54.6                        |                                    | 49.3                 | 575.9                        | 137.6          | 2.6                      | 1.000011       |  |                           |
| 78500.0                           | 30.2                  | -54.5                        |                                    | 48.1                 | 576.1                        | 160.9          | 3.4                      | 1.000011       |  |                           |



UPPER AIR DATA  
1110030160  
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STATION ALTITUDE 4051.00 FEET MSL  
21 APR. 77  
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WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

TABLE VII. (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA                |                | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|------------------------------|----------------------------|--------------------------|----------------|---------------------------|
|                                   |                       |   |                      |                              |                            | DIRECTION<br>DEGREES(TN) | SPEED<br>KNOTS |                           |
| 79000.0                           | 29.5                  | -54.2                                       |                      | 47.0                         | 576.4                      | 173.9                    | 4.6            | 1.000010                  |
| 79500.0                           | 28.8                  | -54.0                                       |                      | 45.8                         | 576.7                      | 181.4                    | 5.4            | 1.000010                  |
| 80000.0                           | 28.2                  | -53.8                                       |                      | 44.7                         | 577.0                      | 188.1                    | 5.2            | 1.000010                  |
| 80500.0                           | 27.5                  | -53.6                                       |                      | 43.7                         | 577.3                      | 195.1                    | 5.1            | 1.000010                  |
| 81000.0                           | 26.9                  | -53.4                                       |                      | 42.6                         | 577.5                      | 210.3                    | 4.9            | 1.000009                  |
| 81500.0                           | 26.3                  | -53.2                                       |                      | 41.6                         | 577.8                      | 233.7                    | 5.1            | 1.000009                  |
| 82000.0                           | 25.7                  | -52.9                                       |                      | 40.6                         | 578.1                      | 252.3                    | 6.1            | 1.000009                  |
| 82500.0                           | 25.1                  | -52.7                                       |                      | 39.6                         | 578.4                      | 278.1                    | 12.5           | 1.000009                  |
| 83000.0                           | 24.5                  | -52.5                                       |                      | 38.6                         | 578.7                      | 287.0                    | 22.0           | 1.000009                  |
| 83500.0                           | 23.9                  | -52.3                                       |                      | 37.7                         | 579.0                      | 290.4                    | 31.7           | 1.000008                  |
| 84000.0                           | 23.4                  | -52.1                                       |                      | 36.8                         | 579.3                      | 293.3                    | 26.9           | 1.000008                  |
| 84500.0                           | 22.8                  | -51.8                                       |                      | 35.9                         | 579.6                      | 297.8                    | 20.7           | 1.000008                  |
| 85000.0                           | 22.3                  | -51.6                                       |                      | 35.1                         | 579.8                      |                          |                | 1.000008                  |
| 85500.0                           | 21.8                  | -51.4                                       |                      | 34.2                         | 580.1                      |                          |                | 1.000008                  |
| 86000.0                           | 21.3                  | -51.2                                       |                      | 33.4                         | 580.4                      |                          |                | 1.000007                  |
| 86500.0                           | 20.8                  | -51.0                                       |                      | 32.6                         | 580.7                      |                          |                | 1.000007                  |
| 87000.0                           | 20.3                  | -50.7                                       |                      | 31.8                         | 581.0                      |                          |                | 1.000007                  |



UPPER AIR DATA  
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STATION ALTITUDE 4051.00 FFF FT MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 160

WSTM SITE COORDINATES  
450491.60 FEET E  
464023.05 FEET N

TABLE VII. (CONT)

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | RFL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION<br>DEGREES(TN) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|--|----------------------|------------------------------|----------------------------|---------------------------------------|----------------|---------------------------|
| 49000.0                        | 124.1                 | -55.9                                    |                      | 199.0                        | 574.2                      | 230.2                                 | 19.3           | 1.000044                  |
| 49500.0                        | 121.2                 | -56.3                                    |                      | 194.7                        | 573.6                      | 234.7                                 | 19.1           | 1.000043                  |
| 50000.0                        | 119.3                 | -56.6                                    |                      | 190.3                        | 573.3                      | 240.2                                 | 19.1           | 1.000042                  |
| 50500.0                        | 115.5                 | -56.5                                    |                      | 185.7                        | 573.4                      | 242.9                                 | 19.0           | 1.000041                  |
| 51000.0                        | 112.8                 | -56.4                                    |                      | 181.3                        | 573.6                      | 243.8                                 | 18.7           | 1.000040                  |
| 51500.0                        | 110.1                 | -56.3                                    |                      | 174.9                        | 573.7                      | 243.9                                 | 18.3           | 1.000039                  |
| 52000.0                        | 107.5                 | -56.2                                    |                      | 172.7                        | 573.8                      | 234.7                                 | 17.5           | 1.000038                  |
| 52500.0                        | 105.0                 | -56.5                                    |                      | 168.8                        | 573.5                      | 224.8                                 | 17.1           | 1.000038                  |
| 53000.0                        | 102.5                 | -57.0                                    |                      | 165.2                        | 572.7                      | 216.2                                 | 17.0           | 1.000037                  |
| 53500.0                        | 100.1                 | -57.6                                    |                      | 161.7                        | 572.0                      | 209.0                                 | 17.2           | 1.000036                  |
| 54000.0                        | 97.7                  | -57.3                                    |                      | 157.7                        | 572.3                      | 202.0                                 | 17.6           | 1.000035                  |
| 54500.0                        | 95.4                  | -57.0                                    |                      | 153.8                        | 572.7                      | 201.7                                 | 17.3           | 1.000034                  |
| 55000.0                        | 93.1                  | -56.7                                    |                      | 149.9                        | 573.1                      | 201.6                                 | 17.0           | 1.000033                  |
| 55500.0                        | 90.9                  | -56.7                                    |                      | 146.4                        | 573.1                      | 202.4                                 | 16.6           | 1.000033                  |
| 56000.0                        | 88.8                  | -56.9                                    |                      | 143.0                        | 572.9                      | 204.4                                 | 16.2           | 1.000032                  |
| 56500.0                        | 86.7                  | -57.1                                    |                      | 139.7                        | 572.6                      | 206.6                                 | 15.8           | 1.000031                  |
| 57000.0                        | 84.6                  | -57.3                                    |                      | 136.6                        | 572.3                      | 208.0                                 | 17.2           | 1.000030                  |
| 57500.0                        | 82.6                  | -57.5                                    |                      | 133.4                        | 572.1                      | 209.1                                 | 18.7           | 1.000030                  |
| 58000.0                        | 80.6                  | -57.7                                    |                      | 130.4                        | 571.8                      | 211.3                                 | 21.6           | 1.000029                  |
| 58500.0                        | 78.7                  | -57.9                                    |                      | 127.4                        | 571.5                      | 213.7                                 | 25.5           | 1.000028                  |
| 59000.0                        | 76.9                  | -58.1                                    |                      | 124.5                        | 571.3                      | 216.0                                 | 28.2           | 1.000028                  |
| 59500.0                        | 75.0                  | -58.3                                    |                      | 121.7                        | 571.0                      | 220.4                                 | 26.1           | 1.000027                  |
| 60000.0                        | 73.2                  | -58.5                                    |                      | 118.9                        | 570.7                      | 225.6                                 | 24.3           | 1.000026                  |
| 60500.0                        | 71.5                  | -58.7                                    |                      | 116.2                        | 570.5                      | 231.1                                 | 22.1           | 1.000026                  |
| 61000.0                        | 69.6                  | -58.9                                    |                      | 113.5                        | 570.2                      | 237.8                                 | 20.0           | 1.000025                  |
| 61500.0                        | 68.1                  | -59.1                                    |                      | 110.9                        | 570.0                      | 242.3                                 | 19.2           | 1.000025                  |
| 62000.0                        | 66.5                  | -59.2                                    |                      | 108.3                        | 569.8                      | 243.5                                 | 19.5           | 1.000024                  |
| 62500.0                        | 64.9                  | -59.3                                    |                      | 105.8                        | 569.6                      | 244.4                                 | 19.6           | 1.000024                  |
| 63000.0                        | 63.4                  | -58.2                                    |                      | 102.7                        | 571.2                      | 241.5                                 | 16.1           | 1.000023                  |
| 63500.0                        | 61.9                  | -57.0                                    |                      | 99.7                         | 572.8                      | 236.9                                 | 12.6           | 1.000022                  |

STATION ALTITUDE 4051.00 FEET MSL  
 21 APR. 77 0840 HRS MST  
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UPPER AIR DATA  
 1110330160  
 JALLEN

WSTM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

TABLE VII. (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | REF. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA                 |                | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|--|----------------------|------------------------------|----------------------------|---------------------------|----------------|---------------------------|
|                                   |                       |  |                      |                              |                            | DIRECTION<br>DEGREES (TN) | SPEED<br>KNOTS |                           |
| 19000.0                           | 494.5                 | -20.4                                    | 33.2                 | 681.2                        | 619.5                      | 322.7                     | 31.2           | 1.000154                  |
| 19500.0                           | 484.3                 | -21.6                                    | 31.7                 | 670.5                        | 617.9                      | 325.1                     | 30.9           | 1.000151                  |
| 20000.0                           | 474.2                 | -22.9                                    | 30.2                 | 660.0                        | 616.4                      | 329.0                     | 30.1           | 1.000149                  |
| 20500.0                           | 464.4                 | -24.1                                    | 28.7                 | 649.6                        | 614.8                      | 329.2                     | 29.3           | 1.000146                  |
| 21000.0                           | 454.4                 | -25.4                                    | 27.2                 | 639.4                        | 613.2                      | 330.1                     | 28.5           | 1.000144                  |
| 21500.0                           | 445.4                 | -26.7                                    | 25.7                 | 629.4                        | 611.7                      | 330.3                     | 28.3           | 1.000141                  |
| 22000.0                           | 436.2                 | -27.9                                    | 24.2                 | 619.6                        | 610.1                      | 330.3                     | 28.3           | 1.000139                  |
| 22500.0                           | 427.2                 | -29.2                                    | 22.7                 | 609.9                        | 608.5                      | 331.7                     | 27.8           | 1.000137                  |
| 23000.0                           | 418.2                 | -30.5                                    | 22.4                 | 600.5                        | 606.8                      | 333.4                     | 27.4           | 1.000134                  |
| 23500.0                           | 409.3                 | -32.0                                    | 23.2                 | 591.3                        | 605.0                      | 333.5                     | 27.6           | 1.000132                  |
| 24000.0                           | 400.6                 | -33.5                                    | 23.9                 | 582.3                        | 603.1                      | 333.5                     | 27.9           | 1.000130                  |
| 24500.0                           | 392.0                 | -34.9                                    | 25.1                 | 573.1                        | 601.4                      | 333.4                     | 27.9           | 1.000128                  |
| 25000.0                           | 383.5                 | -36.3                                    | 26.2                 | 564.1                        | 599.6                      | 333.4                     | 27.9           | 1.000126                  |
| 25500.0                           | 375.2                 | -37.7                                    | 25.0                 | 555.1                        | 597.8                      | 331.5                     | 28.6           | 1.000124                  |
| 26000.0                           | 366.9                 | -39.0                                    | 18.3                 | 545.9                        | 596.1                      | 329.4                     | 29.3           | 1.000122                  |
| 26500.0                           | 358.9                 | -40.3                                    | 11.0                 | 537.0                        | 594.4                      | 328.8                     | 30.5           | 1.000120                  |
| 27000.0                           | 351.0                 | -41.7                                    | 4.0                  | 528.2                        | 592.7                      | 328.4                     | 31.7           | 1.000118                  |
| 27500.0                           | 343.2                 | -42.8                                    |                      | 519.0                        | 591.3                      | 329.3                     | 32.7           | 1.000116                  |
| 28000.0                           | 335.5                 | -43.7                                    |                      | 509.3                        | 590.1                      | 330.5                     | 33.6           | 1.000113                  |
| 28500.0                           | 327.9                 | -44.6                                    |                      | 499.8                        | 589.0                      | 331.0                     | 35.3           | 1.000111                  |
| 29000.0                           | 320.5                 | -45.5                                    |                      | 490.5                        | 587.8                      | 331.2                     | 37.4           | 1.000109                  |
| 29500.0                           | 313.3                 | -46.4                                    |                      | 481.3                        | 586.7                      | 331.3                     | 39.6           | 1.000107                  |
| 30000.0                           | 306.3                 | -47.3                                    |                      | 472.4                        | 585.5                      | 331.3                     | 41.8           | 1.000105                  |
| 30500.0                           | 299.4                 | -48.2                                    |                      | 463.5                        | 584.3                      | 331.0                     | 44.5           | 1.000103                  |
| 31000.0                           | 292.5                 | -48.9                                    |                      | 454.4                        | 583.4                      | 330.1                     | 48.1           | 1.000101                  |
| 31500.0                           | 285.8                 | -49.6                                    |                      | 445.5                        | 582.4                      | 329.4                     | 51.5           | 1.000099                  |
| 32000.0                           | 279.2                 | -50.7                                    |                      | 437.3                        | 581.1                      | 329.0                     | 54.7           | 1.000097                  |
| 32500.0                           | 272.6                 | -51.7                                    |                      | 429.2                        | 579.7                      | 328.7                     | 57.0           | 1.000096                  |
| 33000.0                           | 266.5                 | -52.8                                    |                      | 421.3                        | 578.3                      | 328.5                     | 53.9           | 1.000094                  |
| 33500.0                           | 260.3                 | -53.5                                    |                      | 412.7                        | 577.4                      | 328.3                     | 50.8           | 1.000092                  |

.. AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4051.00 FFF FT MSL  
21 APR. 77 0840 HRS MST  
ASCENSION NO. 143

UPPER AIR DATA  
111003016  
JALLEN

TABLE VII. (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | REF. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA                |                | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|------------------------------|----------------------------|--------------------------|----------------|---------------------------|
|                                   |                       |   |                      |                              |                            | DIRECTION<br>DEGREES(TN) | SPEED<br>KNOTS |                           |
| 34000.0                           | 254.2                 | -54.1                                       |                      | 434.3                        | 576.6                      | 327.9                    | 47.6           | 1.000090                  |
| 34500.0                           | 244.2                 | -54.8                                       |                      | 396.1                        | 575.6                      | 327.4                    | 44.4           | 1.000088                  |
| 35000.0                           | 242.4                 | -55.6                                       |                      | 388.1                        | 574.7                      | 326.5                    | 45.0           | 1.000086                  |
| 35500.0                           | 236.7                 | -56.3                                       |                      | 380.2                        | 573.7                      | 325.6                    | 46.2           | 1.000085                  |
| 36000.0                           | 231.1                 | -57.1                                       |                      | 372.5                        | 572.7                      | 323.5                    | 47.3           | 1.000083                  |
| 36500.0                           | 225.5                 | -57.1                                       |                      | 363.8                        | 572.6                      | 321.2                    | 48.4           | 1.000081                  |
| 37000.0                           | 220.3                 | -57.1                                       |                      | 355.2                        | 572.6                      | 319.5                    | 46.7           | 1.000079                  |
| 37500.0                           | 215.0                 | -57.1                                       |                      | 346.7                        | 572.6                      | 318.0                    | 43.4           | 1.000077                  |
| 38000.0                           | 209.9                 | -57.1                                       |                      | 338.5                        | 572.6                      | 315.8                    | 39.0           | 1.000075                  |
| 38500.0                           | 205.7                 | -56.7                                       |                      | 329.9                        | 573.1                      | 312.3                    | 33.1           | 1.000073                  |
| 39000.0                           | 200.1                 | -56.0                                       |                      | 321.1                        | 574.1                      | 306.9                    | 28.7           | 1.000072                  |
| 39500.0                           | 195.4                 | -56.6                                       |                      | 314.4                        | 573.2                      | 299.1                    | 27.8           | 1.000070                  |
| 40000.0                           | 190.8                 | -57.3                                       |                      | 307.9                        | 572.4                      | 291.0                    | 27.4           | 1.000069                  |
| 40500.0                           | 186.2                 | -57.4                                       |                      | 300.8                        | 572.2                      | 283.0                    | 27.0           | 1.000067                  |
| 41000.0                           | 181.8                 | -57.1                                       |                      | 293.2                        | 572.6                      | 275.0                    | 27.1           | 1.000065                  |
| 41500.0                           | 177.5                 | -57.1                                       |                      | 286.2                        | 572.7                      | 269.5                    | 27.6           | 1.000064                  |
| 42000.0                           | 173.3                 | -57.0                                       |                      | 279.4                        | 572.7                      | 264.5                    | 28.3           | 1.000062                  |
| 42500.0                           | 169.2                 | -57.0                                       |                      | 272.7                        | 572.8                      | 261.6                    | 30.5           | 1.000061                  |
| 43000.0                           | 165.2                 | -56.9                                       |                      | 266.2                        | 572.8                      | 260.1                    | 33.6           | 1.000059                  |
| 43500.0                           | 161.3                 | -56.8                                       |                      | 259.7                        | 573.0                      | 260.1                    | 35.9           | 1.000058                  |
| 44000.0                           | 157.5                 | -56.2                                       |                      | 252.9                        | 573.8                      | 262.5                    | 36.9           | 1.000056                  |
| 44500.0                           | 153.8                 | -55.6                                       |                      | 246.2                        | 574.7                      | 264.6                    | 37.5           | 1.000055                  |
| 45000.0                           | 150.2                 | -54.9                                       |                      | 239.7                        | 575.5                      | 264.4                    | 33.9           | 1.000053                  |
| 45500.0                           | 146.6                 | -55.3                                       |                      | 234.5                        | 575.0                      | 264.1                    | 30.2           | 1.000052                  |
| 46000.0                           | 143.2                 | -55.7                                       |                      | 229.4                        | 574.4                      | 257.3                    | 27.0           | 1.000051                  |
| 46500.0                           | 139.8                 | -56.2                                       |                      | 224.4                        | 573.9                      | 247.2                    | 24.4           | 1.000050                  |
| 47000.0                           | 136.5                 | -56.6                                       |                      | 219.6                        | 573.3                      | 239.6                    | 22.9           | 1.000049                  |
| 47500.0                           | 133.3                 | -57.0                                       |                      | 214.8                        | 572.8                      | 235.9                    | 21.9           | 1.000048                  |
| 48000.0                           | 130.1                 | -56.1                                       |                      | 208.9                        | 573.9                      | 232.5                    | 21.0           | 1.000047                  |
| 48500.0                           | 127.1                 | -55.4                                       |                      | 203.3                        | 574.8                      | 231.4                    | 20.2           | 1.000045                  |

STATION ALTITUDE 4051.00 FEET MSL  
 21 APR. 77  
 ASCENSION NO. 140

MANDATORY LEVELS  
 1110030160  
 JALLEN

WSTM SITE COORDINATES  
 450491.60 FEET E  
 464023.05 FEET N

TABLE VIII.

| PRESSURE<br>MILLIBARS | GEOPOTENTIAL<br>FEET | TEMPERATURE<br>AIR<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT | WIND DATA                |                |
|-----------------------|----------------------|--|----------------------|--------------------------|----------------|
|                       |                      |  |                      | DIRECTION<br>DEGREES(TN) | SPEED<br>KNOTS |
| 850.0                 | 5942.                | 6.9                                      | 46.                  | 31.1                     | .6             |
| 900.0                 | 6681.                | 6.9                                      | 31.                  | 279.1                    | 4.1            |
| 750.0                 | 8407.                | 2.5                                      | 43.                  | 321.9                    | 9.6            |
| 700.0                 | 10221.               | -2.4                                     | 57.                  | 348.3                    | 17.2           |
| 650.0                 | 12139.               | -6.1                                     | 42.                  | 333.1                    | 22.2           |
| 600.0                 | 14180.               | -10.2                                    | 57.                  | 324.0                    | 22.5           |
| 550.0                 | 16366.               | -14.0                                    | 38.                  | 321.0                    | 24.7           |
| 500.0                 | 18715.               | -19.7                                    | 34.                  | 322.2                    | 30.5           |
| 450.0                 | 21250.               | -26.0                                    | 36.                  | 330.3                    | 28.3           |
| 400.0                 | 24006.               | -33.5                                    | 24.                  | 333.5                    | 27.9           |
| 350.0                 | 27026.               | -41.8                                    | 3.00                 | 328.3                    | 31.9           |
| 300.0                 | 30405.               | -48.1                                    |                      | 331.1                    | 44.7           |
| 250.0                 | 34289.               | -54.6                                    |                      | 327.6                    | 45.4           |
| 200.0                 | 38934.               | -56.0                                    |                      | 306.8                    | 28.7           |
| 175.0                 | 41707.               | -57.0                                    |                      | 266.6                    | 28.0           |
| 150.0                 | 44917.               | -54.9                                    |                      | 264.4                    | 33.8           |
| 125.0                 | 48723.               | -55.8                                    |                      | 230.6                    | 19.6           |
| 100.0                 | 53369.               | -57.6                                    |                      | 208.9                    | 17.2           |
| 80.0                  | 58000.               | -57.8                                    |                      | 212.2                    | 22.8           |
| 70.0                  | 60757.               | -58.9                                    |                      | 236.8                    | 20.3           |
| 60.0                  | 63939.               | -56.9                                    |                      | 224.9                    | 9.4            |
| 50.0                  | 67709.               | -59.0                                    |                      | 328.4                    | 2.4            |
| 40.0                  | 72330.               | -56.6                                    |                      | 40.6                     | 6.1            |
| 30.0                  | 78347.               | -54.4                                    |                      | 165.4                    | 3.7            |
| 25.0                  | 82195.               | -52.7                                    |                      | 278.7                    | 12.9           |
| 20.0                  | 86945.               | -50.6                                    |                      |                          |                |

.. AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.



STATION ALTITUDE 4126.59 FEET MSL  
21 APR. 77 0850 HRS MST  
ASCENSION NO. 277

SIGNIFICANT LEVEL DATA  
111001027/  
HOLLOMAN

WSTM SITE COORDINATES  
571739.24 FEET E  
362745.21 FEET N

TABLE IX.

| PRESSURE GEOMETRIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE |          | REL. HUM.<br>PERCENT |
|--|---|----------|----------------------|
|  | AIR   | DEWPOINT |                      |
| 680.1  | 12.2  | 1.8      | 49.0                 |
| 869.7  | 9.4   | -1.6     | 46.0                 |
| 850.0  | 8.3   | -2.0     | 43.0                 |
| 819.8  | 7.7   | -4.7     | 41.0                 |
| 710.1  | -6  | -10.8    | 46.0                 |
| 700.0  | -1.8  | -10.6    | 51.0                 |
| 677.8  | -4.3  | -10.9    | 60.0                 |
| 666.8  | -5.6  | -11.1    | 65.0                 |
| 618.8  | -8.5  | -18.5    | 44.0                 |
| 566.3  | -12.5   | -23.0    | 41.0                 |
| 532.3  | -15.6   | -29.5    | 29.0                 |
| 500.0  | -19.2   | -31.0    | 34.0                 |
| 400.0  | -33.6   | -43.1    | 30.0                 |
| 368.3  | -38.9   | -49.8    | 30.0                 |
| 311.8  | -47.6   |          |                      |
| 300.0  | -49.2   |          |                      |
| 286.3  | -51.4   |          |                      |
| 271.3  | -52.3   |          |                      |
| 250.0  | -54.5   |          |                      |
| 210.8  | -58.6   |          |                      |
| 200.0  | -56.0   |          |                      |
| 176.3  | -56.0   |          |                      |
| 160.3  | -58.6   |          |                      |
| 153.3  | -55.6   |          |                      |
| 150.0  | -56.0   |          |                      |
| 135.3  | -57.4   |          |                      |
| 112.3  | -55.5   |          |                      |
| 100.0  | -58.6   |          |                      |
| 91.8   | -59.3   |          |                      |
| 89.3   | -58.3   |          |                      |



STATION ALTITUDE 4126.59 FEET MSL  
 21 APR. 77 0850 HRS MST  
 ASCENSION NO. 277

SIGNIFICANT LEVEL DATA  
 1110010277  
 HOLLOMAN

TABLE IX. (CONT)

| PRESSURE GEOMETRIC<br>ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT |
|--|---|----------------------|
| 80.3 58047.3   | -60.9   |                      |
| 74.3 59645.1   | -59.7   |                      |

WESTM SITE COORDINATES  
 571739.24 FEET E  
 362745.21 FEET N

STATION ALTITUDE 4126.59 FEET MSL  
21 APR. 77 0850 HRS MST  
ASCENSION NO. 277

UPPER AIR DATA  
1110010277  
HOLLOMAN  
TABLE X.

WSTW SITE COORDINATES  
571739.24 FEET E  
362745.21 FEET N

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | TEMPERATURE<br>DEWPOINT<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION<br>DEGREES (TN) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|---------------------------------------|----------------------|------------------------------|----------------------------|--|----------------|---------------------------|
| 4126.6                            | 880.1                 | 12.2  | 1.8                                   | 49.0                 | 1074.2                       | 059.1                      | 0                                      | 0              | 1.000271                  |
| 4800.0                            | 856.6                 | 8.8   | -1.9                                  | 47.1                 | 1050.5                       | 054.9                      | 252.0                                  | 1.6            | 1.000261                  |
| 5000.0                            | 833.7                 | 8.0   | -3.4                                  | 44.3                 | 1030.9                       | 053.9                      | 252.0                                  | 3.6            | 1.000252                  |
| 5400.0                            | 809.3                 | 7.0   | -5.2                                  | 41.5                 | 1004.5                       | 052.6                      | 262.6                                  | 4.7            | 1.000244                  |
| 7200.0                            | 785.3                 | 5.2   | -6.5                                  | 42.5                 | 981.0                        | 050.6                      | 299.0                                  | 8.0            | 1.000237                  |
| 8000.0                            | 762.1                 | 3.5   | -7.7                                  | 43.5                 | 953.1                        | 048.5                      | 299.0                                  | 11.4           | 1.000230                  |
| 8800.0                            | 739.6                 | 1.8   | -9.0                                  | 44.6                 | 933.8                        | 046.4                      | 301.4                                  | 12.9           | 1.000224                  |
| 9000.0                            | 717.7                 | 0   | -10.3                                 | 45.6                 | 914.0                        | 044.4                      | 311.3                                  | 12.7           | 1.000218                  |
| 10400.0                           | 690.3                 | -2.2  | -10.6                                 | 52.5                 | 893.9                        | 041.7                      | 318.0                                  | 14.0           | 1.000213                  |
| 11200.0                           | 675.2                 | -4.6  | -10.9                                 | 61.2                 | 874.6                        | 038.9                      | 328.6                                  | 17.8           | 1.000209                  |
| 12000.0                           | 654.5                 | -6.3  | -12.8                                 | 59.8                 | 853.4                        | 036.8                      | 337.0                                  | 20.2           | 1.000202                  |
| 12800.0                           | 634.4                 | -7.5  | -15.9                                 | 51.0                 | 831.1                        | 035.3                      | 352.2                                  | 20.3           | 1.000195                  |
| 13600.0                           | 614.8                 | -8.8  | -18.9                                 | 43.8                 | 809.5                        | 033.7                      | 323.1                                  | 20.1           | 1.000188                  |
| 14400.0                           | 595.7                 | -10.2                                       | -20.4                                 | 42.7                 | 786.7                        | 031.9                      | 320.0                                  | 21.0           | 1.000182                  |
| 15200.0                           | 577.2                 | -11.6                                       | -22.0                                 | 41.6                 | 760.3                        | 030.2                      | 321.1                                  | 23.5           | 1.000177                  |
| 16000.0                           | 559.1                 | -13.1                                       | -24.3                                 | 38.5                 | 746.7                        | 028.4                      | 321.2                                  | 26.7           | 1.000172                  |
| 16800.0                           | 541.5                 | -14.7                                       | -27.6                                 | 32.3                 | 729.6                        | 026.4                      | 320.5                                  | 29.2           | 1.000166                  |
| 17600.0                           | 524.3                 | -16.5                                       | -29.9                                 | 30.2                 | 711.3                        | 024.5                      | 319.3                                  | 29.9           | 1.000161                  |
| 18400.0                           | 507.5                 | -18.3                                       | -30.6                                 | 32.8                 | 693.6                        | 022.0                      | 319.6                                  | 30.2           | 1.000157                  |
| 19200.0                           | 491.0                 | -20.4                                       | -32.2                                 | 33.7                 | 676.5                        | 019.5                      | 319.9                                  | 30.4           | 1.000153                  |
| 20000.0                           | 474.7                 | -22.5                                       | -34.3                                 | 33.1                 | 659.8                        | 016.8                      | 320.4                                  | 30.0           | 1.000149                  |
| 20800.0                           | 459.0                 | -24.7                                       | -36.4                                 | 32.5                 | 643.5                        | 014.1                      | 323.3                                  | 28.3           | 1.000145                  |
| 21600.0                           | 443.8                 | -26.9                                       | -38.6                                 | 31.9                 | 627.7                        | 011.4                      | 329.3                                  | 25.9           | 1.000141                  |
| 22400.0                           | 429.1                 | -29.1                                       | -40.7                                 | 31.3                 | 614.4                        | 008.7                      | 334.4                                  | 25.2           | 1.000137                  |
| 23200.0                           | 414.9                 | -31.2                                       | -42.8                                 | 30.7                 | 597.4                        | 006.0                      | 338.5                                  | 26.0           | 1.000134                  |
| 24000.0                           | 401.2                 | -33.4                                       | -44.9                                 | 30.1                 | 582.9                        | 003.2                      | 341.3                                  | 26.3           | 1.000131                  |
| 24800.0                           | 387.4                 | -35.6                                       | -46.9                                 | 30.0                 | 566.2                        | 000.4                      | 337.7                                  | 28.2           | 1.000127                  |
| 25600.0                           | 374.1                 | -37.9                                       | -48.9                                 | 30.0                 | 553.9                        | 000.0                      | 335.4                                  | 29.8           | 1.000124                  |
| 26400.0                           | 361.0                 | -39.9                                       | -51.8                                 | 26.4**               | 539.2                        | 000.0                      | 333.9                                  | 30.9           | 1.000120                  |
| 27200.0                           | 348.2                 | -41.8                                       | -55.8                                 | 19.9**               | 524.4                        | 000.0                      | 332.0                                  | 31.5           | 1.000117                  |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4126.59 FEET MSL  
 21 APR. 77 0850 HRS MST  
 ASCENSION NO. 277

UPPER AIR DATA  
 1110010277  
 HOLLOMAN

WSTM SITE COORDINATES  
 571739.24 FEET E  
 362745.21 FEET N

TABLE X. (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE    |                        | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KIOTS | WIND DATA                |                | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|----------------|------------------------|----------------------|------------------------------|----------------------------|--------------------------|----------------|---------------------------|
|                                   |                       | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE |                      |                              |                            | DIRECTION<br>DEGREES(TN) | SPEED<br>KIOTS |                           |
| 28000.0                           | 335.8                 | -43.7          | -60.5                  | 13.4**               | 509.9                        | 590.1                      | 327.8                    | 32.1           | 1.000114                  |
| 28800.0                           | 323.9                 | -45.6          | -66.9                  | 6.9**                | 495.9                        | 587.7                      | 323.8                    | 32.9           | 1.000111                  |
| 29600.0                           | 312.4                 | -47.5          | -86.5                  | .4**                 | 482.3                        | 585.2                      | 320.0                    | 37.8           | 1.000107                  |
| 30400.0                           | 301.1                 | -49.0          |                        |                      | 468.1                        | 583.2                      | 319.3                    | 44.0           | 1.000104                  |
| 31200.0                           | 290.1                 | -51.0          |                        |                      | 455.1                        | 580.5                      | 321.4                    | 49.4           | 1.000101                  |
| 32000.0                           | 279.5                 | -51.9          |                        |                      | 440.0                        | 579.5                      | 324.2                    | 53.4           | 1.000098                  |
| 32800.0                           | 269.2                 | -52.5          |                        |                      | 425.0                        | 578.7                      | 328.6                    | 58.4           | 1.000095                  |
| 33600.0                           | 259.2                 | -53.5          |                        |                      | 411.1                        | 577.3                      | 328.4                    | 54.5           | 1.000092                  |
| 34400.0                           | 249.6                 | -54.5          |                        |                      | 397.7                        | 576.0                      | 327.9                    | 51.0           | 1.000089                  |
| 35200.0                           | 240.2                 | -55.5          |                        |                      | 384.4                        | 574.8                      | 324.4                    | 50.0           | 1.000086                  |
| 36000.0                           | 231.2                 | -56.4          |                        |                      | 371.5                        | 573.6                      | 328.2                    | 50.1           | 1.000083                  |
| 36800.0                           | 222.5                 | -57.3          |                        |                      | 359.1                        | 572.4                      | 319.8                    | 40.5           | 1.000080                  |
| 37600.0                           | 214.1                 | -58.2          |                        |                      | 347.1                        | 571.1                      | 302.5                    | 37.8           | 1.000077                  |
| 38400.0                           | 206.1                 | -57.5          |                        |                      | 332.9                        | 572.1                      | 291.9                    | 44.3           | 1.000074                  |
| 39200.0                           | 198.3                 | -56.0          |                        |                      | 318.2                        | 574.1                      | 300.7                    | 51.0           | 1.000071                  |
| 40000.0                           | 190.9                 | -56.0          |                        |                      | 308.2                        | 574.1                      | 285.4                    | 34.4           | 1.000068                  |
| 40800.0                           | 183.7                 | -56.0          |                        |                      | 294.8                        | 574.1                      | 257.0                    | 28.0           | 1.000066                  |
| 41600.0                           | 176.9                 | -56.0          |                        |                      | 283.7                        | 574.1                      | 244.4                    | 33.3           | 1.000063                  |
| 42400.0                           | 170.2                 | -57.0          |                        |                      | 274.3                        | 572.8                      | 272.1                    | 47.8           | 1.000061                  |
| 43200.0                           | 163.8                 | -58.0          |                        |                      | 263.2                        | 571.4                      | 279.5                    | 57.0           | 1.000059                  |
| 44000.0                           | 157.6                 | -57.5          |                        |                      | 254.6                        | 572.1                      | 280.0                    | 54.5           | 1.000057                  |
| 44800.0                           | 151.7                 | -55.8          |                        |                      | 243.1                        | 574.4                      | 271.8                    | 33.4           | 1.000054                  |
| 45600.0                           | 146.0                 | -56.4          |                        |                      | 234.6                        | 573.8                      | 212.8                    | 22.0           | 1.000052                  |
| 46400.0                           | 140.5                 | -56.9          |                        |                      | 226.4                        | 572.9                      | 191.9                    | 30.6           | 1.000050                  |
| 47200.0                           | 135.2                 | -57.4          |                        |                      | 218.4                        | 572.2                      | 201.1                    | 31.8           | 1.000049                  |
| 48000.0                           | 130.2                 | -57.0          |                        |                      | 209.8                        | 572.8                      | 225.8                    | 27.0           | 1.000047                  |
| 48800.0                           | 125.3                 | -56.6          |                        |                      | 201.6                        | 573.3                      | 246.2                    | 26.6           | 1.000045                  |
| 49600.0                           | 120.6                 | -56.2          |                        |                      | 193.7                        | 573.8                      | 257.8                    | 28.5           | 1.000043                  |
| 50400.0                           | 116.1                 | -55.8          |                        |                      | 186.1                        | 574.3                      | 276.4                    | 25.7           | 1.000041                  |
| 51200.0                           | 111.7                 | -55.6          |                        |                      | 178.9                        | 574.6                      | 306.1                    | 27.6           | 1.000040                  |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4126.59 FEET MSL  
21 APR. 77 0850 HRS MST  
ASCENSION NO. 277

UPPER AIR DATA  
1110010277  
HOLLOMAN

WSTM SITE COORDINATES  
571739.24 FEET E  
362745.21 FEET N

TABLE X. (CONT)

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION<br>DEGREES (TN) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|--|----------------------|------------------------------|----------------------------|--|----------------|---------------------------|
| 52000.0                           | 107.5                 | -56.7                                    |                      | 173.0                        | 573.2                      | 264.1                                  | 5.0            | 1.000039                  |
| 52800.0                           | 103.5                 | -57.7                                    |                      | 167.3                        | 571.8                      |  |                | 1.000037                  |
| 53600.0                           | 99.6                  | -58.6                                    |                      | 161.7                        | 570.8                      |  |                | 1.000036                  |
| 54400.0                           | 95.8                  | -59.0                                    |                      | 155.8                        | 570.2                      |  |                | 1.000035                  |
| 55200.0                           | 92.2                  | -59.3                                    |                      | 150.1                        | 569.7                      |  |                | 1.000033                  |
| 56000.0                           | 88.7                  | -58.5                                    |                      | 145.9                        | 570.6                      |  |                | 1.000032                  |
| 56800.0                           | 85.3                  | -59.4                                    |                      | 139.0                        | 569.5                      |  |                | 1.000031                  |
| 57600.0                           | 82.1                  | -60.4                                    |                      | 134.3                        | 568.3                      |  |                | 1.000030                  |
| 58400.0                           | 78.9                  | -60.6                                    |                      | 129.4                        | 567.9                      |  |                | 1.000029                  |
| 59200.0                           | 75.9                  | -60.0                                    |                      | 124.1                        | 568.7                      |  |                | 1.000028                  |



STATION ALTITUDE 4126.59 FEET MSL  
21 APR. 77 0850 HRS MST  
ASCENSION NO. 277

MANDATORY LEVELS  
111001027/  
HOLLOMAN  
TABLE XI.

| PRESSURE GEOPOTENTIAL |        | TEMPERATURE    |                        | REL. HUM. |                          | WIND DATA      |  |
|-----------------------|--------|----------------|------------------------|-----------|--------------------------|----------------|--|
| MILLIBARS             | FEET   | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE | PERCENT   | DIRECTION<br>DEGREES(TN) | SPEED<br>KNOTS |  |
| 850.0                 | 5073.  | 8.3            | -2.0                   | 48.       | 252.0                    | 2.3            |  |
| 800.0                 | 6712.  | 6.3            | -5.7                   | 42.       | 296.7                    | 5.5            |  |
| 750.0                 | 8437.  | 2.6            | -8.4                   | 44.       | 300.0                    | 12.4           |  |
| 700.0                 | 10254. | -1.8           | -10.0                  | 51.       | 317.0                    | 13.8           |  |
| 650.0                 | 12170. | -6.6           | -13.5                  | 58.       | 350.5                    | 20.8           |  |
| 600.0                 | 14210. | -9.9           | -20.1                  | 43.       | 319.6                    | 20.7           |  |
| 550.0                 | 16396. | -14.0          | -25.9                  | 35.       | 320.9                    | 28.2           |  |
| 500.0                 | 18748. | -19.2          | -31.0                  | 34.       | 319.9                    | 30.3           |  |
| 450.0                 | 21285. | -26.0          | -37.7                  | 32.       | 327.3                    | 26.5           |  |
| 400.0                 | 24040. | -33.6          | -45.1                  | 30.       | 341.5                    | 26.4           |  |
| 350.0                 | 27061. | -41.6          | -55.2                  | 21.**     | 332.6                    | 31.5           |  |
| 300.0                 | 30433. | -49.2          |                        |           | 319.5                    | 44.6           |  |
| 250.0                 | 34304. | -54.5          |                        |           | 328.1                    | 51.1           |  |
| 200.0                 | 38945. | -58.0          |                        |           | 290.9                    | 49.4           |  |
| 175.0                 | 41731. | -56.2          |                        |           | 253.9                    | 36.2           |  |
| 150.0                 | 44932. | -56.0          |                        |           | 262.2                    | 27.6           |  |
| 125.0                 | 48722. | -56.6          |                        |           | 246.7                    | 26.5           |  |
| 100.0                 | 53367. | -58.6          |                        |           |                          |                |  |
| 80.0                  | 57953. | -60.8          |                        |           |                          |                |  |

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.